

1. An apparatus for accurately metering and conveying a dry powder or granular material comprising:

a tank adapted to store the dry powder or granular material;

a hopper disposed inside of the tank;

a conveyor that delivers the dry powder or granular material from the tank to the hopper in a substantially enclosed environment; and

a metering feeder disposed at least partially within the tank and adapted to deliver the dry powder or granular material from the hopper at a substantially uniform density.

2. The apparatus according to claim 1 wherein the tank has a funnel-shaped bottom.

3. The apparatus according to claim 2 wherein the conveyor comprises a horizontal section disposed at the bottom of the tank, which draws the dry material from the bottom of the tank.

4. The apparatus according to claim 3 wherein the conveyor further comprises a vertical section, which conveys the dry powder or granular material from the bottom of the tank to the hopper.

5. The apparatus according to claim 4 wherein the vertical section of the conveyor is partially disposed within the tank.

6. The apparatus according to claim 4 wherein the vertical portion of the conveyor is disposed completely outside of the tank.

7. The apparatus according to claim 4 wherein the vertical section of the conveyor comprises a bucket elevator.

8. The apparatus according to claim 4 wherein the horizontal and vertical sections of the conveyor comprise screw-type augers.

9. The apparatus according to claim 4 wherein the vertical section of the conveyor further comprises a chute for directing the dry powder or granular material into the hopper.

10. The apparatus according to claim 1 wherein the hopper is disposed in the tank at a location above where the dry powder or granular material is held.

11. The apparatus according to claim 10 wherein the hopper has an open top that allows the dry powder or granular material to overflow into the tank.

12. The apparatus according to claim 2 further comprising an agitator or vibrator that causes the dry powder or granular material to settle at the bottom of the tank.

13. An apparatus for accurately metering and conveying a dry powder or granular material comprising:

means for storing the dry powder or granular material;

means for metering the dry powder or granular material out of the storing means at a substantially uniform density; and

means for supplying the metering means with the dry powder or granular material at a bulk rate that exceeds the rate at which the metering means conveys the dry powder or granular material and in a substantially enclosed environment.

14. The apparatus according to claim 13 wherein the storing means comprises a bulk material tank.

15. The apparatus according to claim 13 wherein the metering means comprises a metering feeder.

16. The apparatus according to claim 13 wherein the supplying means comprises a hopper from which the metering means draws dry powder or granular material.

17. The apparatus according to claim 16 wherein the supplying means further comprises a conveyor for delivering dry powder or granular material to the hopper.

18. The apparatus according to claim 17 wherein the supplying means further comprises a chute for directing dry powder or granular material from the conveyor to the hopper.

19. The apparatus according to claim 17 wherein the conveyor comprises a screw-type auger.

20. The apparatus according to claim 17 wherein the conveyor comprises a bucket elevator.

21. The apparatus according to claim 17 wherein the conveyor comprises a horizontal section and a vertical section.

22. The apparatus according to claim 21 wherein the storage means has a funnel-shaped bottom and the horizontal section of the conveyor draws dry powder or granular material from the bottom of the storage means.

23. The apparatus according to claim 21 wherein the vertical section of the conveyor is partially disposed within the tank.

24. The apparatus according to claim 21 wherein the vertical portion of the conveyor is disposed completely outside of the tank.

25. The apparatus according to claim 13 wherein the metering means further comprises a chute for discharging the dry powder or granular material from the tank.

26. A method of accurately metering and conveying a dry powder or granular material comprising the steps of:

storing the dry powder or granular material in a storage tank;

metering dry powder or granular material out of the storage tank at a substantially uniform density with a metering feeder; and

supplying the metering feeder with dry powder or granular material at a bulk rate that exceeds the rate at which the metering feeder conveys the dry powder or granular material and in a substantially enclosed environment.